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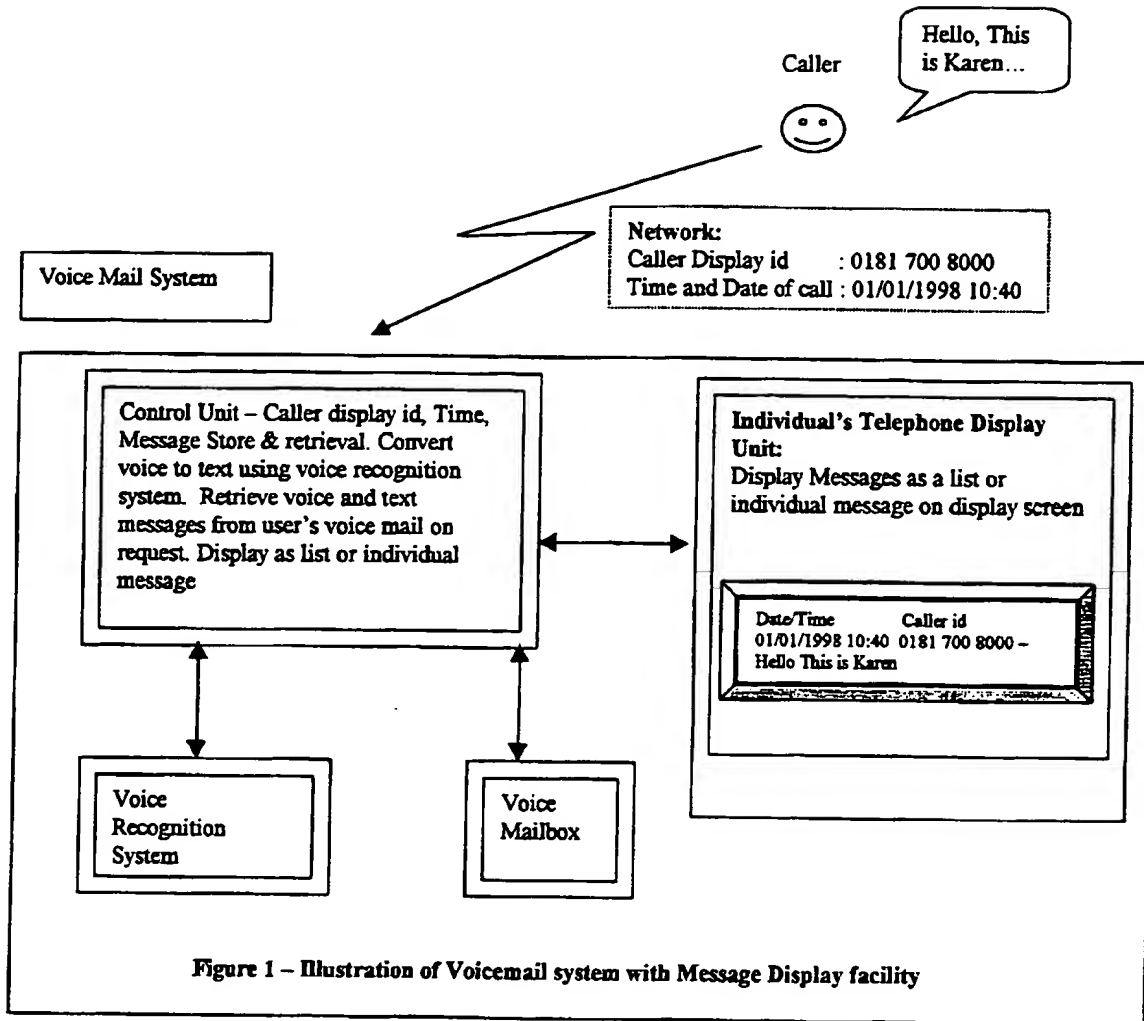|	
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(72) Inventor(s) Nita Mistry	(58) Field of Search UK CL (Edition P) H4K KFH KF50C INT CL^6 H04L 12/58 , H04M 3/50 ONLINE:WPI
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(54) Abstract Title
Voice mail system

(57) Voice Mail systems allow callers to leave voice message to the individual's voice mailbox, if the person being called is not available for any reason. With this invention, these voice messages can be processed by a voice recognition system and converted into a textual form for display, print or to be forwarded to their E-mail box. To use the existing networked print and E-mail facilities of the business premise, the Voice mail system would have to be configured to the Local area Network (LAN) technology, to address the local printers and the E-mail system. The Voice mail system would also have a database of printer ids and E-mail id's associated with the individual's voice mailbox. The user can retrieve messages either by listening or using display facilities of the telephone unit. Additional caller details can be captured using the current digital network technology which enables the capture of the calling party number and the time and date (time stamp) when the voice message was received.
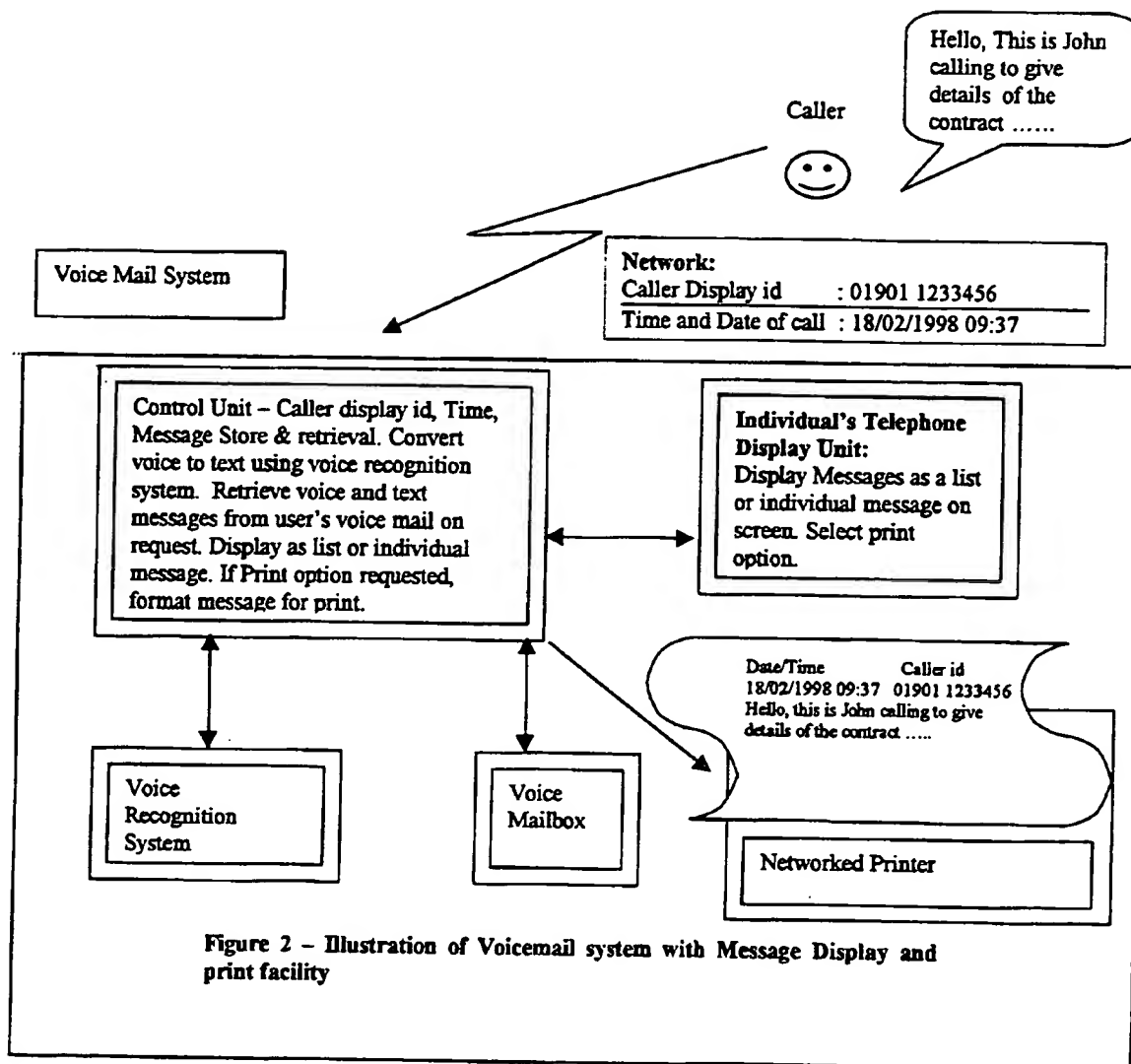
Figure 1

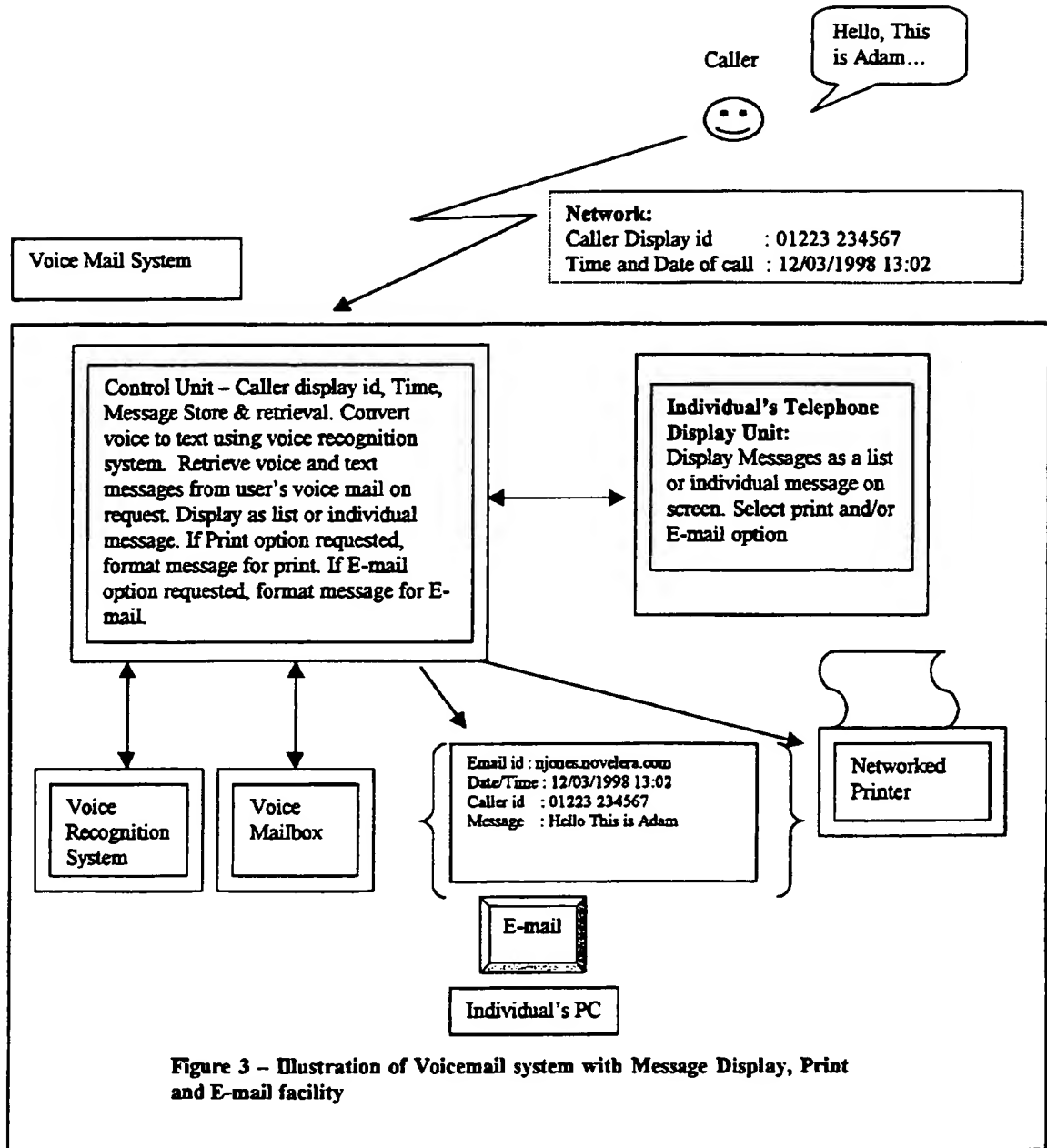GB 2 334 404 A

1.6.1 Figure 1 - Voicemail system with message display facility
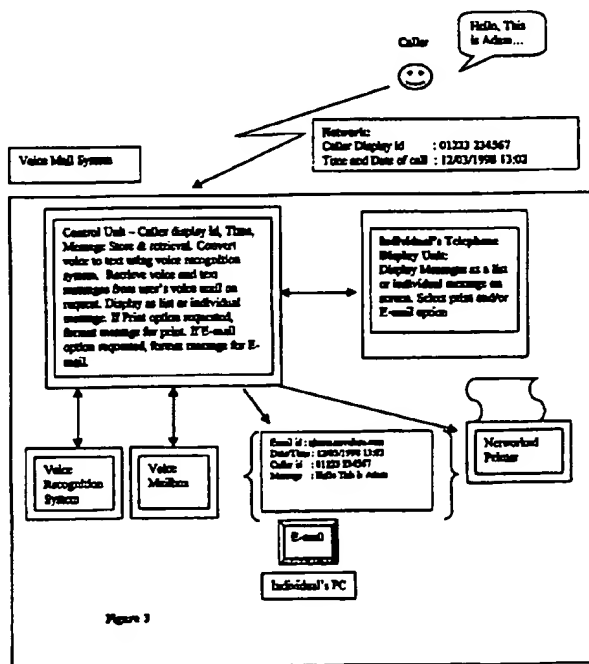
Figure 1 – Illustration of Voicemail system with Message Display facility

1.6.2 Figure 2 - Voicemail system with message display and print facility

Caller

Hello, This is John
calling to give
details of the
contract ......

Voice Mail System

Network:
Caller Display id   : 01901 1233456
Time and Date of call : 18/02/1998 09:37

Control Unit – Caller display id, Time,
Message Store & retrieval. Convert
voice to text using voice recognition
system. Retrieve voice and text
messages from user's voice mail on
request. Display as list or individual
message. If Print option requested,
format message for print.

Individual's Telephone
Display Unit:
Display Messages as a list
or individual message on
screen. Select print
option.

Date/Time   Caller id
18/02/1998 09:37 01901 1233456
Hello, this is John calling to give
details of the contract .....

Voice
Recognition
System

Voice
Mailbox

Networked Printer

Figure 2 – Illustration of Voicemail system with Message Display and
print facility

1.6.3 Figure 3 - Voicemail system with Message Display, Print and E-mail facility

Caller

Hello, This
is Adam...

Network:
Caller Display id   : 01223 234567
Time and Date of call   : 12/03/1998 13:02

Voice Mail System

Control Unit – Caller display id, Time,
Message Store & retrieval. Convert
voice to text using voice recognition
system. Retrieve voice and text
messages from user's voice mail on
request. Display as list or individual
message. If Print option requested,
format message for print. If E-mail
option requested, format message for E-
mail.

Individual's Telephone
Display Unit:
Display Messages as a list
or individual message on
screen. Select print and/or
E-mail option

Voice
Recognition
System

Voice
Mailbox

Email id : njones.novelera.com
Date/Time : 12/03/1998 13:02
Caller id   : 01223 234567
Message   : Hello This is Adam

Networked
Printer

E-mail

Individual's PC

**Figure 3 – Illustration of Voicemail system with Message Display, Print
and E-mail facility**

1 Invention :

Voice messages to text with display, print and E-mail options on a Voicemail System

1.1 Background

When retrieving voice messages, the voicemail user has to listen to the message and try to write down any important information such as names and contact numbers. The invention alleviates this simultaneous activity of trying to listen and capture the information. It provides a convenient method for the user to retrieve a copy of the information that is already stored on the voice mail system in textual format. The textual information can then be made available for display, print or sent to their E-mailbox .

An immediate advantage is that it would be an efficient and potentially more accurate method of retrieving messages, whereas the manual method of retrieving messages is generally very time consuming, as the user may have to listen to the message several times, to ensure the information has been heard correctly for recording.

A display option provides the user the facility to prioritise messages at a glance and therefore respond to important calls first. Whilst the more complicated messages can be printed or re-directed to their E-mailbox of the user.

1.2 Commercial and Economic Features

The main commercial advantage of having a voicemail system with display and print facilities would be to enable voicemail users to prioritise their calls and have accurate information recorded for efficient query resolution.

The main economical advantage is that voicemail users will take less time retrieving voice messages and are more likely to return calls and hence appear to be more responsive and pro-active to their customers.

1.3 Technical Features

The main technical advantage of this invention is that voice messages can be converted to textual format and displayed, printed or forwarded to an E-mailbox. In business premises with printers connected to Local Area Networks (LAN), the voicemail system can be configured to use the existing network. At the voicemail user end the system should have options to allow the user to define their local printer destination. This will enable the user to direct their messages to their local printer.

Another technical advantage of this invention is that converted voice messages can also be displayed using the users telephone display terminal in a textual format. If the user requires listening to the original voice message they can do so using the existing voice mail facilities.

Page 1

This invention is illustrated by figures 1-3 and can be implemented as follows :

The voice messages can be captured using existing voicemail systems. The voice mail system will need to record the voice message time stamp and the calling party number from the network, if available. The captured voice message is sent to the voice recognition entity for conversion into text. The calling party number and timestamp will be available in data format from the network.

The voice recognition entity processes the captured voice message and converts each spoken word into the most likely written word. If a particular spoken word or sound is not recognised, then it is clearly represented using a special character such as '?'. After converting the voice message into textual format this information is recorded on the individual's voice mailbox.

Once the text message is returned to the voicemail system, it can be formatted and stored in the individuals voice mailbox, ready for retrieval.

Figure 1 – Illustration of Voicemail system with Message Display facility (see Diagram in section 1.6.1)

This illustrates the use of the text message for display

The user can perform the following functions using the display list :

1) Listen to the original voice message
2) Return the call using the calling party number or by retrieving the callers number from their message.
3) Save the message
4) Delete the message
5) Select a message to be displayed in full

The implementation of the above display features would require software to be written in the voicemail system to handle the Display list feature. It would also interface with existing features such as retrieve, save, delete messages. Once the user has retrieved the full details of the message, an option to return to the display list would be available.

Figure 2 – Illustration of Voicemail system with Message Display and print facility (see Diagram in section 1.6.2)

This illustrates the integration of the Display features shown in Figure 1 with an additional facility to print messages

The implementation of this facility would require the voicemail system to interface with the existing Local Area Network (LAN). This would then give connectivity with the printers defined on the LAN. The voicemail system would require software to define the printer identification and their destinations. It would also require software to associate individual voice mailboxes to these printer identifications in order to route text messages.

With the addition of the print option the individual would have the following options available :

1) Print selected message
2) Print all messages from display list
3) Print all messages for a specified date

The implementation of the above options would require software to interface with existing features illustrated in Figure 1 and also to convert messages into printable format. This could then be directed to the specified printer destination defined on the individual's mailbox.

Figure 3 – Illustration of Voicemail system with Message Display, Print and E-mail facility (see Diagram in section 1.6.3)

This illustrates the integration of Display features from Figure 1, Print features from Figure 2 with an additional facility to E-mail

The implementation of this would require the voicemail system to interface with the existing LAN to connect to the business's existing Electronic mail system. This would then give the connectivity to individual's PC's to send E-mail messages via the voicemail system. The voicemail system would be setup as an E-mail entity (i.e. receiver/sender) to the existing E-mail system to enable it to send messages. The voicemail system would require software to convert the text messages into acceptable E-mail format with the message being addressed with the individual's E-mail id. For this addressing, software would require to be available to associate the individual's E-mail id with their voice mailbox. Once the E-mail is delivered to the E-mailbox the individual can process the message using existing facilities.

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1.4 CLAIMS

CLAIM 1 : The use of voice recognition technology in the application of voice message conversion to text

CLAIM 2 : The converted text messages in Claim 1 to be formatted and printed

CLAIM 3 : The converted text messages in Claim 1 to be formatted and displayed

CLAIM 4 : The converted text messages in Claim 1 to be formatted into E-mail compatible with E-mail addressing and sent via E-mail

CLAIM 5 : To connect the Voicemail system to the Local Area Network

CLAIM 6 : The networked Voicemail system in Claim 5 used to connect to the Networked printers

CLAIM 7 : The networked Voicemail system in Claim 5 used to connect to the Networked PC's to send E-mail messages

Application No: GB 9803105.7	**Examiner:** Richard Howe
Claims searched: 1-7	**Date of search:** 10 June 1998

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

   UK Cl (Ed.P): H4K (KF50C, KFH)

   Int Cl (Ed.6): H04M (3/50); H04L (12/58)

Other: ONLINE:WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	EP 0 660 575 A2 International Business Machines Corporation - see whole document	1-7
X	EP 0 586 954 A2 Rolm Company - see whole document	1-7

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
		E	Patent document published on or after, but with priority date earlier than, the filing date of this application.
&	Member of the same patent family		

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